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Dated 3/3/99

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1.	Your reference	PL78081GB	
2.	Patent application number (The Patent Office will fill in this part)	9805730.0	
3.	Full name, address and postcode of the or of each applicant (<i>underline all surnames</i>)	Printed Forms Equipment Ltd Oakwood Hill Industrial Estate Loughton Essex IG10 3TZ	
	Patents ADP number (<i>if you know it</i>)		
	If the applicant is a corporate body, give the country/state of its incorporation	GB 669 762001	
4.	Title of the invention	"Collating Device"	
5.	Name of your agent (<i>if you have one</i>)	W.P.THOMPSON & CO.	
	"Address for service" in the United Kingdom to which all correspondence should be sent (<i>including the postcode</i>)	Celcon House 289-293 High Holborn London WC1V 7HU	
	Patents ADP number (<i>if you know it</i>)	158000	
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		Date of filing (<i>Day/month/year</i>)	
7.	If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application	Number of earlier application	Date of filing (<i>Day/month/year</i>)
8.	Is a statement of inventorship and of right to grant of a patent required in support of this request? (<i>Answer 'yes' if:</i> a) any applicant named in part 3 is not an inventor, or b) there is an inventor who is not named as an applicant, or c) any named applicant is a corporate body. See note (d))		
	YES		

Patents Form 1/77

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Continuation sheets of this form

Description

5

Claims(s)

Abstract

Drawing(s)

2

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (*Patents Form 7/77*)

Request for preliminary examination and search (*Patents Form 9/77*)

Request for substantive examination (*Patents Form 10/77*)

Any other documents
(Please specify)

11. I/We request the grant of a patent on the basis of this application
- Signature *W.P. Thompson* Date March 17, 1998
- W.P. THOMPSON & CO.

12. Name and daytime telephone number of person to contact in the United Kingdom
- Annabel M Hector 0171 - 242 3524

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COLLATING DEVICE

The present invention relates to a collating device,
for example for use in mailing machines which collate sheet
material for mailing, fold the collated material and insert
5 it into envelopes.

A known collating device is shown in Figures 1 and 2.
The device 20 comprises conveyor rollers 21 on a shaft 22,
the rollers engaging further conveyor rollers 24 on a shaft
10 25. As shown in Figure 2, sheets extracted from a feeding
station are fed into the collator device between the
rollers 21 & 24 by a rotary drive applied to the shaft 22.
The sheets emerge from between the rollers 21 & 24 to enter
between a base or lower support plate 27 and an upper or
15 guide plate 29. The path followed by each sheet is curved,
as indicated by arrow 30, but once the sheet has fully
entered between the plates 27 & 29, it will lie flat so
that the next sheet fed in will overlies it.

20 The shaft 25 mounts not only the rollers 24 but also
rollers 31 engaged with rollers 32 on a third shaft 34. The
shaft 25 is stationary, and the rollers 24 and 31 are free-
running thereon. Thus, as shown in Figure 3, rotation of
the shaft 34 may effect discharge of a set of sheets
25 accumulated in the collator device.

The discharge of an accumulated stack of sheets from
the collator device can be assisted by the inclination of
the base plate 27 as shown. Additionally or instead, the
30 sheets can be fed in against a stop member 36 at the inner
end of the device, the stop member being biased by a

spring 37. Alternatively, the discharge can be assisted by a solenoid operated pusher located at the position of the stop member 36, the pusher being actuated at the beginning of each discharge operation.

5

This type of collating device requires the various rollers to be driven selectively in order alternately to feed sheets into the device, and to discharge the collated sheets. The present invention aims to provide a more simple
10 device which is easier to operate.

According to the present invention, there is provided a collating device for sheet material comprising a collating station having a pair of guide members for
15 receiving the sheets to be collated therebetween, first conveyor means for conveying sheets consecutively into the collating station and second conveyor means for conveying a collated stack of sheets out of the collating station,
20 support means biased towards a position for supporting sheets in the collating station away from the second conveyor means, and an actuator member movable to urge a collated stack of sheets towards the second conveyor means against the bias of the support means.

25 Preferably, the support means is a flexible member mounted adjacent the opening between the guide members, and the actuator is mounted across the guide members to form a closed end of the collating station.

30 The first conveyor means may be a nip between first and second rollers or sets of rollers, and the second

conveyor means may be a nip between the second and a third roller or set of rollers. Thus, the flexible member may be arranged to support sheets in the collating station in a position between the first and second nips resting against the second roller(s). The actuator may then be movable
5 towards the opening between the guide members so as to urge the sheets against the second roller(s). The sheets may thus frictionally engage the second roller(s) and be conveyed into the second nip.

10 Thus, in accordance with this invention, the rollers may be continuously operated during the collating and discharge processes.

15 In order that the invention may be more readily understood, reference will now be made, by way of example, to the accompanying drawings, in which :

Figure 1 is a schematic cross-sectional side view of a collating device according to the prior art;

20 Figure 2 is a schematic plan view of part of the device shown in Figure 1; and

Figure 3 is a schematic cross-sectional side view of a collating device according to the present invention.

25 Referring to Figure 3, the collating device includes first and second rollers or sets of rollers 2,4 which cooperate to form a first nip 3 for conveying sheets towards a collating station 1. The second roller 4 further cooperates with a third roller or set of rollers 6 to form
30 a second nip 5 for conveying a collated stack out of the collating station 1. The collating station 1 comprises a

lower support plate 8 and an upper guide plate 10. A flexible lip 12 extends from the support plate 8 to a position adjacent the second roller 4 between the first and second nips 3,5. An actuator 14 is mounted across the
5 plates 8, 10 forming a closed end of the collating station 1, and is moveable towards or away from the opening 9 between the plates 8, 10.

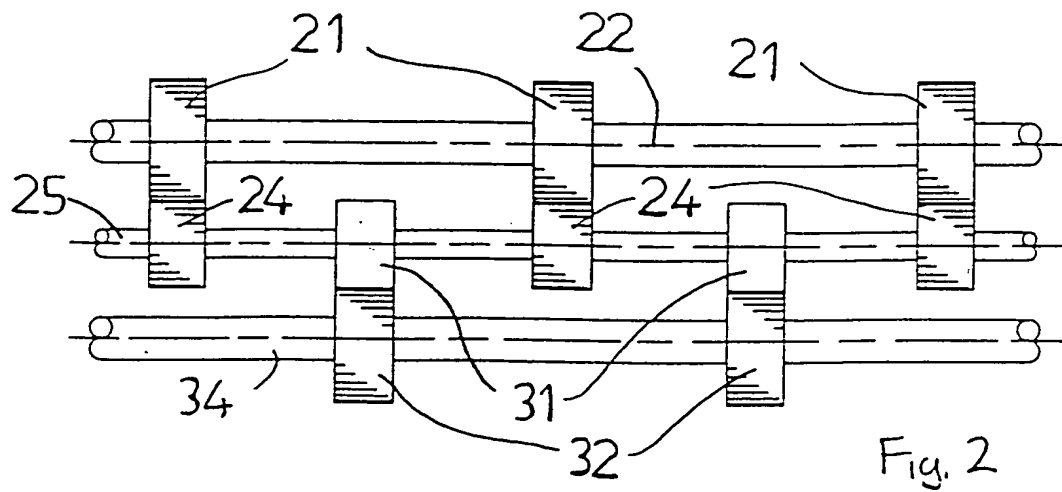
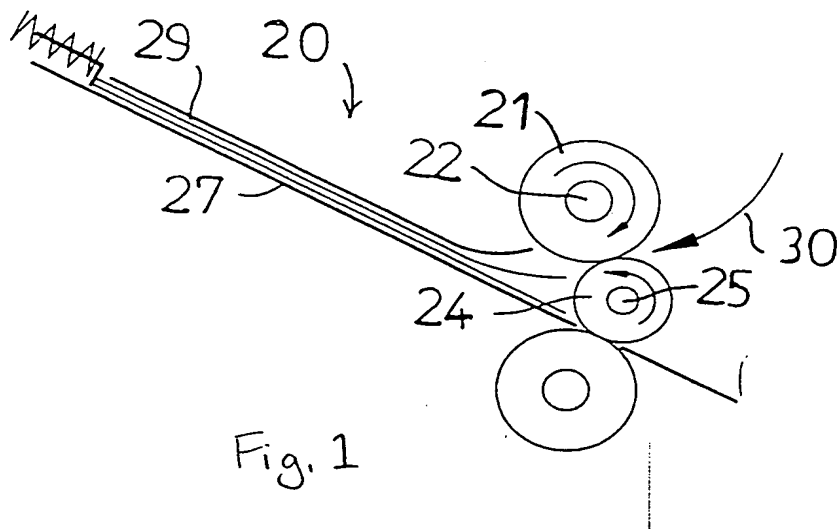
In use, the rollers 2,4,6 are driven in the directions
10 shown by the arrows such that a sheet 16 entering the first nip 3 is conveyed into the collating station 1 between the plates 8, 10. When a sheet 16 has entered the collating station 1 and the trailing edge 18 of the sheet 16 leaves the nip 3 it drops down and comes to rest supported on the
15 flexible lip 12, and resting against the rotating edge of the second roller 4.

The actuator 14 may be positioned such that in this position the leading edge 17 of a sheet 16 in the collating
20 station 1 abuts the actuator 14. Alternatively, the actuator 14 may be positioned further away from the opening. Further sheets may be fed into the collating station to overlie each other.

25 When the required number of sheets have been collated, the actuator 14 is moved towards the opening 9. This action causes the previously trailing edges 18 of the sheets 16 to engage frictionally with the surface of the second roller
4. Thus the trailing edges 18 move around with the roller 4
30 towards the second nip 5, overcoming the bias of the flexible lip 12, which flexes away towards the support

- 5 -

plate 8. The collated stack of sheets 16 then enters the second nip 5 and is conveyed out of the collating station 1.



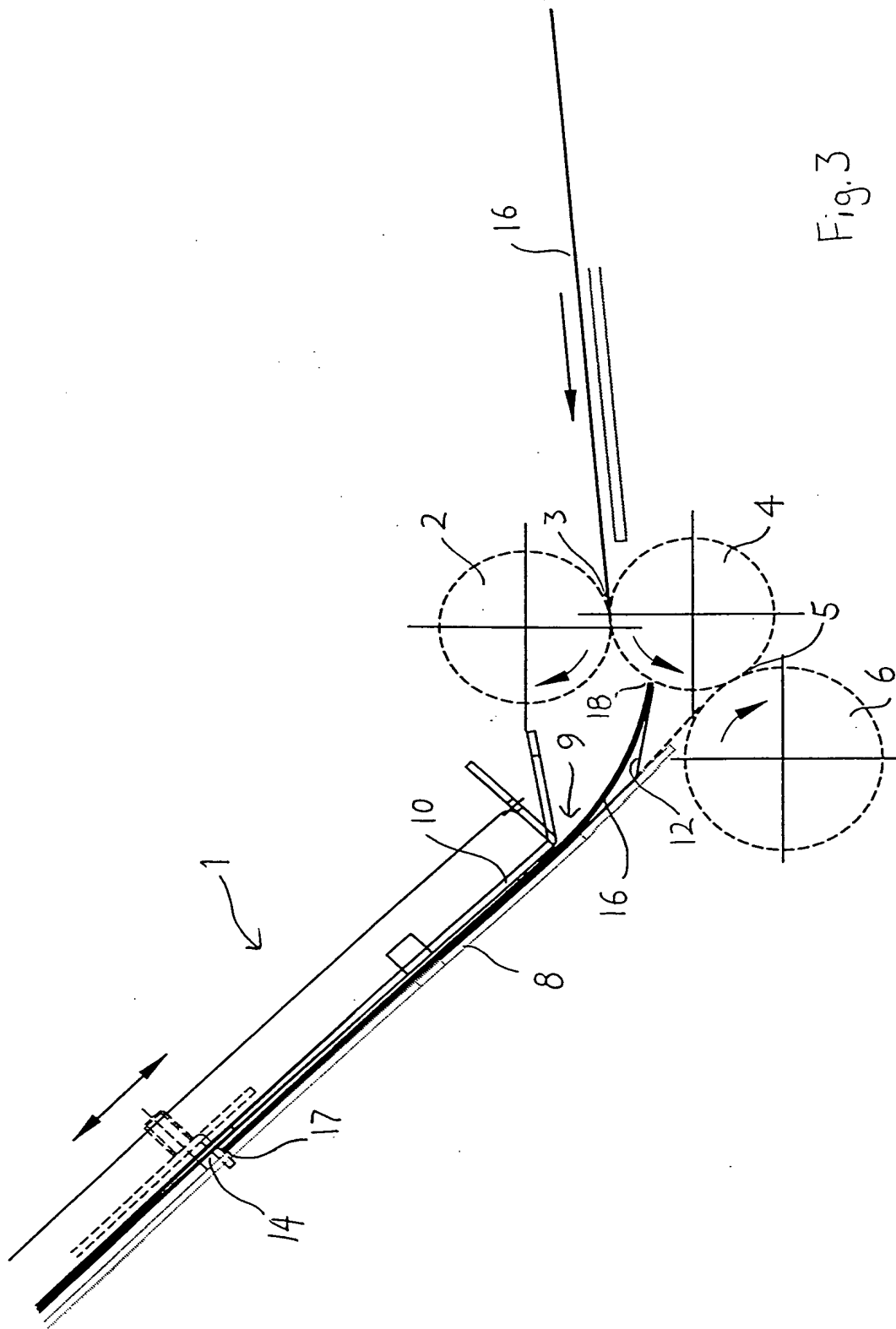


Fig. 3